

**SEARCH REQUEST FORM**

Scientific and Technical Information Center

Requester's Full Name: JOSEPH D NGUYEN Examiner #: 79989 Date: 1/21/04  
 Art Unit: 2683 Phone Number: 30605-1301 Serial Number: 9873439  
 Mail Box and Bldg/Room Location: CPK2/BBD2 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Mobile node and network capable of det. position of the Mobile node  
 Inventors (please provide full names): Thomas English et al

Earliest Priority Filing Date: 6/4/2001

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

**STAFF USE ONLY**

Searcher: Vamshi Kalakuntla  
 Searcher Phone #: 703 306 0254  
 Searcher Location: CPK2 3C03  
 Date Searcher Picked Up: 01/28/04  
 Date Completed: 01/28/04  
 Searcher Prep & Review Time: 60 mins  
 Clerical Prep Time: \_\_\_\_\_  
 Online Time: 25 mins

**Type of Search**

NA Sequence (#) \_\_\_\_\_  
 AA Sequence (#) \_\_\_\_\_  
 Structure (#) \_\_\_\_\_  
 Bibliographic ☒ \_\_\_\_\_  
 Litigation \_\_\_\_\_  
 Fulltext ☒ \_\_\_\_\_  
 Patent Family \_\_\_\_\_  
 Other \_\_\_\_\_

**Vendors and cost where applicable**

STN \_\_\_\_\_  
 Dialog \_\_\_\_\_  
 Questel/Orbit \_\_\_\_\_  
 Dr.Link \_\_\_\_\_  
 Lexis/Nexis \_\_\_\_\_  
 Sequence Systems \_\_\_\_\_  
 WWW/Internet \_\_\_\_\_  
 Other (specify) \_\_\_\_\_



# STIC Search Report

## EIC 2600

STIC Database Tracking Number: 11264-2

TO: Joseph Nguyen  
Location: PK2 – 8B02  
Art Unit : 2683  
Wednesday, January 28, 2004  
  
Case Serial Number: 09/873439

From: Vamshi Kalakuntla  
Location: EIC 2600  
PK2-3C03  
Phone: 306-0254

Vamshi.kalakuntla@uspto.gov

### Search Notes

Dear Joseph Nguyen;

Attached please find the results of your search request 09/873439. Per your direction, I stopped searching further.

I searched the standard Dialog Patent files, and the internet.

If you would like a re-focus please let me know.

Please feel free to contact me if you have questions or concerns. Thank you and have a great day.

*Please take a moment and fill out the attached feedback form. Thank you.*



# STIC Search Report

## EIC 2600

STIC Database Tracking Number: 112642

TO: Joseph Nguyen  
Location: PK2 – 8B02  
Art Unit : 2683  
Wednesday, January 28, 2004

Case Serial Number: 09/873439

From: Vamshi Kalakuntla  
Location: EIC 2600  
PK2-3C03  
Phone: 306-0254

Vamshi.kalakuntla@uspto.gov

### Search Notes

Dear Joseph Nguyen;

Attached please find the results of your search request 09/873439.  
I searched the standard Dialog Patent files, and the internet.

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Please feel free to contact me if you have questions or concerns. Thank you and have a great day.

*Please take a moment and fill out the attached feedback form. Thank you.*

1/3,K/1 (Item 1 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
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00897792 \*\*Image available\*\*

**METHODS AND SYSTEM FOR REDUCING POTENTIAL INTERFERENCE IN AN IMPULSE RADIO SYSTEM**

**PROCEDES ET SYSTEMES PERMETTANT DE DIMINUER LE BROUILLAGE POTENTIEL DANS UNE RADIO A IMPULSIONS**

Patent Applicant/Assignee:

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Patent and Priority Information (Country, Number, Date):

Patent: WO 200232008 A2-A3 20020418 (WO 0232008)

Application: WO 2001US31891 20011012 (PCT/WO US0131891)

Priority Application: US 2000689702 20001013; US 2001754079 20010105; US  
2001778843 20010208

Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU  
CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP  
KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PH PL PT RO RU  
SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW  
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR  
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG  
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW  
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 66636

Fulltext Availability:

Detailed Description

Detailed Description

... radio without increasing hardware or power requirements in the impulse radio.

A low duty cycle **impulse radio** includes an architecture directed to low

duty cycle, pulsed operation. Therefore, the low duty cycle **impulse radio** does not typically include a preponderance of known circuit elements directed to continuous wave transceiver...

...are found in many types of relatively high duty cycle wireless transceivers, such as in **cellular** and telephones, Personal Communication Devices (PCS) devices, Pulse Doppler radars, CW ranging equipment, and so... Impulse signal 906 and at least one of interference 911 and 914 are received by **impulse radio** receiver 910 of **impulse radio** 904. Interference sources 908 and 912 can be any number of known interfering devices including, for example, consumer operated microwave ovens, **cellular** telephones and related devices, Personal

Communication System (PCS) radios and related devices, and/or any...

...emanating radio frequency energy that can be received by and interfere with the operation of **impulse radio** 904. For example, microwave ovens are known to emanate interfering RF energy at a frequency ...

...1.2 NIHZ. Such RE energy and signals can interfere with impulse signal reception at **impulse radio** 904. In accordance with the present invention, **impulse radio** receiver 910 includes an architecture for canceling interference energy received from, for example, interference sources...below. The interference frequencies may be known for a number of reasons. For example, an **impulse radio** user may be near a microwave oven in a home or restaurant environment. Alternatively, the **impulse radio** user may be near a known **cellular** and/or PCS communication tower. Additionally, a propagation environment survey may have been conducted indicating another source of interference energy near the **impulse radio** user.

FIG. 23 is a block diagram of an example impulse radio

1/3,K/2 (Item 2 from file: 349)  
DIALOG(R)File 349:PCT FULLTEXT  
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00826425 \*\*Image available\*\*

**VIRTUAL WIRELESS LOCAL AREA NETWORK USING IMPULSE RADIO**  
**SYSTEME ET PROCEDE DE RESEAU RADIO A ZONES LOCALES VIRTUELLES PAR IMPULSION RADIO**

Patent Applicant/Assignee:

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Huntsville, AL 35806, US, US (Residence), US (Nationality)

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SOKOHL Robert E (et al) (agent), Sterne, Kessler, Goldstein & Fox  
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20005-3934, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200159992 A2-A3 20010816 (WO 0159992)

Application: WO 2001US3542 20010205 (PCT/WO US0103542)

Priority Application: US 2000501372 20000211

Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ

DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ

LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG

SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 11285

Fulltext Availability:

Detailed Description

Detailed Description

... or a notebook computer, it could be a wireless communication means 1124 such as a **impulse radio** cordless communication device, a **cellular** communication device with **impulse radio** integration as described in the patent application incorporated herein by reference, an electronic organizer such...  
...a palm pilot@ developed by 3COMM or any other device that can interface with an **impulse radio** transceiver and communicate information.

FIG. 12 illustrates the flow chart of the method of operation...

1/3,K/3 (Item 3 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
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00798324 \*\*Image available\*\*

**MOBILE COMMUNICATIONS SYSTEM AND METHOD UTILIZING IMPULSE RADIO**  
**SYSTEME ET PROCEDE DE COMMUNICATION MOBILE REPOSANT SUR LA COMMUNICATION**  
**RADIO PAR IMPULSIONS**

Patent Applicant/Assignee:

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Legal Representative:

SOKOHL Robert E (et al) (agent), Sterne, Kessler, Goldstein & Fox  
P.L.L.C., Suite 600, 1100 New York Avenue, Washington, DC 20005-3934,  
US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200131929 A2-A3 20010503 (WO 0131929)

Application: WO 2000US41493 20001025 (PCT/WO US0041493)

Priority Application: US 99161356 19991026; US 99436235 19991109

Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ

DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ

LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG

SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 12277

Fulltext Availability:

Detailed Description

Claims

English Abstract

...apparatus for wireless communication and more particularly, a method and apparatus for wireless communication utilizing **impulse radio** wherein an **impulse radio** communication system (1112) integrated with

existing **cellular** /PCS wireless communication system (1106) and/or current land line communication systems (1114).

#### Detailed Description

Mobile Communications System and Method

Utilizing **Impulse Radio**

Background of the Invention

I 0

Field of the Invention

The present invention relates generally...

...More particularly, the present invention provides a 5 method and apparatus for wireless communication utilizing **impulse radio** wherein an **impulse radio** communication system integrates with existing **cellular** /PCS wireless communication svstems and/or current land line communication svstems.

Background of the Invention...

...provided. according to the present invention, by a method and apparatus for wireless communication utilizing **impulse radio** , wherein an **impulse radio** communication system either stands alone or integrates with existing **cellular** /PCS wireless communication svstems and/or current land line communication svstems.  
Brief Description of the...into an impulse radio base station.

FIG. I I is a block diai4ram. of an **impulse radio cellular** telephone (IRCT) I 0 system embodying the present invention.

FIG. 12 is a block diagram of an **impulse radio cellular** telephone embodying the present invention.

FIG. I') is a block diagram of another embodiment of an **impulse radio cellular** telephone according to the present invention.

FIG. 14 is a flow chart for the process used by the **impulse radio cellular** telephones in FIGS. 12 and 13 for placing and receiving **cellular** and **impulse radio** telephone calls.

FIG. 15 is a flow chart for the process used by the **impulse radio cellular** telephones in FIGS. 12 and I') for originating a telephone call as a **cellular** telephone call or a **impulse radio** telephone call according to user selectable preference.

FIG. 16 is a flow chart for the process used by the **impulse radio cellular** telephones in FIGS. 12 and I') for receiving a telephone call as a **cellular** telephone call or a **impulse radio** telephone call according to user selectable preference.

FIG. 17 is a flow chart for the process used by the **impulse radio cellular** telephones in FIGS. 12 and 13 for simultaneously processing both a **cellular** telephone call and a **impulse radio** telephone call and three-way linking both calls.

FIG. 18 is a flow chart for the process used by the **impulse radio cellular**

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telephones in FIGS. 12 and I3 for automatically transferring between a **cellular** telephone call and a **impulse radio** telephone call.

FIG. 19 is a block diagram of audio switch 150 in the impulse radio cellular telephone in FIG. 12

Detailed Description of the Embodiments

Overview of the Invention

I 0...titled

"Precision Timing Generator System and Method". both of which are incorporated herein by reference.

Impulse Radio as Used in the Present Invention

As discussed above, when utilized in utility monitoring of the present invention, the characteristics of impulse radio significantly improve the state of the art. In FIG. 10, there is illustrated a block diagram of an impulse radio cellular /PCS telephone system embodying the present invention wherein the impulse radio wireless communication means is interfaced with a land line 1004 or a Cellular /PCS base station 1040. Connected to wired line 1004 or Cell/PCS base station 1040 is a line connection circuit 1010 which connects to an impulse radio interface circuit 1012. Impulse radio interface circuit interfaces the signals received...

...circuit 1014. A hook detecting circuit 1024 connected to controlling circuit 1014 detects when remote impulse radio is initiating a transmission or "going off hook". Also connected to controlling circuit 1014...

...incoming. Controlling circuit 1014 is in communication with and controls signal flow to impulse radio base station 1016 wherein are an impulse radio receiver 1018 and an impulse radio transmitter 1020. If non-remote dialing is required, a local key-pad and display are ...a telephone company phone system (TELCO) 1108, connected by telephone landlines to a impulse radio base station 1104 having a landline telephone number located in a home, office or any designated area 1102 and to a local area impulse radio base station 1110 having a landline telephone number in another office, building, or other geographical location. Impulse radio base stations 1104 and 1110 communicate with the impulse radio cellular /PCS telephone (IRCT) 1112 through antennas 1118 and 1120. Antenna 1118...

...cellular/PCS mobile communication systems well known to those skilled in the art. Impulse radio base stations 1104 and 1110 are impulse radio transceivers described above and in the patents incorporated herein by reference. These impulse radio transceivers may be interfaced with TELCO 1108 which is the herein described embodiment. however, it is understood that one skilled in the art could, without undue experimentation, interface the impulse radio transceivers with any communication network. Additional community impulse radio base stations 1110 may be located throughout a metropolitan area for providing shared telephone service to IRCTs 1112. With regards to metropolitan areas a unique feature of impulse radio is its ability to adapt to user requirements. For example, in an area such as New York, the user volume can be enormous. By adding additional correlators in the impulse radio transceivers, a large number of users can simultaneously transmit to the impulse radio base station. This would be impossible for prior wireless or cordless systems. The ability to add correlators to impulse radio receivers is described above and in the impulse radio patents incorporated herein by reference.

Also connected through telephone landlines to the same or a...



...a hand-held portable unit. IRCT II 12 includes an antenna II 18 for the impulse radio radio channels and an antenna I 1 20 for the cellular radio channels as illustrated by the embodiment of IRCT 1300 in FIG. 13. In previous...

...telephones were used. channels are in the frequency band from 46-49 MHz and the cellular radio channels are in the frequency band from 824-894 MHz. However, in impulse radio systems, channels are no longer in the frequency domain but rather are based on pseudorandom codes (as described above and in the herein referenced impulse radio patents and documents). Thus, unlike previous "cordless" systems, the limits on channels available and therefore...

...first embodiment of a IRCT 1200 according to the present invention. IRCT 1200 includes a impulse radio transceiver 1234, ' Impulse radio antenna 1236, cellular telephone transceiver 1232, antenna 1224, microcomputer 1206, keypad 1204, display 1202, audio switch 1250, and handset 1230 including speaker 1228 and microphone 1226. Impulse radio transceiver 1234 is fully described above and in the impulse radio documents incorporated herein by reference. Cellular telephone transceiver 1232, microcomputer 1206, keypad 1204, and handset 1230 may be any commercially available cellular transceiver, such as, for example, the transceiver shown and described in Motorola instruction manual number 68P81049E55, entitled "DYNATAC Cellular Mobile Telephone", published by and available from Motorola C & E Parts, 1313 East Algonquin Road...

...multiplexing analog switches 1906-1912 which select between audio signals of audio circuitry 1916 in impulse radio transceiver 1234 and audio circuitry 1918 in cellular transceiver 1232 under control of select signals SELECT1, SELECT2 and LINK from microcomputer 1206. Select... is programmed in accordance with FIGS. 14-18 for operating as a cellular telephone, an impulse radio telephone, or an impulse radio cellular telephone. That is, according to the present invention, IRCT 1200 may simultaneously operate as a cellular telephone and a impulse radio telephone. When operating as a cellular telephone, control signals 1210 TX ENABLE and 1208 RX ENABLE of microcomputer 1206 enable cellular /PCS transmitter 1214 and cellular /PCS receiver 1216, respectively. In addition to control signals 1210 and 1208 to cellular transceiver 1232, microcomputer 1206 also monitors control signals 1218 RSSI, 1220 RX DATA and 122...

...strength, for detecting receive data and for sending transmit data, respectively, used in operation of cellular transceiver 1232. When operating as a impulse radio telephone, control signals 1248 and 1256 of microcomputer 1206 enable impulse radio receiver 1238 and impulse radio transmitter 1254, respectively. In addition to control signals 1248 and 1256 to impulse radio transceiver 1234, microcomputer 1206 also monitors control signals 1246 SIGNAL QUALITY, 1244 RING...

...for sending the transmit security code and dialed digits, respectively, used in operation of impulse radio transceiver 1234.

Dialed digits may also be encoded by keypad 1204 as conventional multifrequency tones...

...to FIG. 1. there is illustrated a block diagram of another

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embodiment of a impulse radio cellular telephone (IRCT) 1200 according to the present invention. IRCT I '100 includes a impulse radio transceiver 1302 in a separate housing with antenna 1304 and connector I I 0. and a cellular telephone I 3 14 in a separate housing and including impulse radio transmitter 1336 and impulse radio receiver I 306 as well as antenna I 308 and connector 1312.

Impulse radio telephone transceiver 1302 may be a plug-in accessory which couples via connectors I 3) I 0 and I 3) I ' to cellular telephone I 3) 14. When impulse radio telephone transceiver 1 302 is plugged into microcomputer I ' 16 of cellular telephone 13 14. it operates in accordance with FIGS. 14 Cellular telephone I ' 14 includes cellular transmitter 1 322, cellular receiver 1 324. microcomputer 1 3 ) 16. keypad I 3 ) 1 8. display 1 320...

...I 3 ) 26. audio switch 1328 and handset 1334 including speaker 1332 and microphone 1330. Impulse radio

telephonetransceiver 1 302 is an impulse radio transceiver as described above and in the impulse radio documents incorporated herein by reference. Cellular/PCS telephone 1314 may be any commercially available cellular transceiver.

Microcomputer I ' 16 of cellular telephone I 3) 14 is coupled to the impulse radio...

...FIGS. 12 and 13. respectively, for placing and receiving cellular and impulse radio telephone calls. Entering at block 1402 user activates the IRCT. The microcomputer 1206 and I 3 ) 16 monitors both the cellular and impulse radio systems for availability thereof and for incoming and outgoing calls. If the cellular/PCS system and/or impulse radio system are available, a corresponding availability indicator is enabled in display 1202 and 1320. In cellular...

...If not, NO branch is taken back to block 1404 to continue monitoring both the cellular /PCS and impulse radio systems for telephone calls. Return to decision block 1404. if an incoming call has been...

...a cellular call. NO branch is taken from block 1406 to block 1414 where an impulse radio call indicator is activated or entered in display 1202 and I 320. and the incoming call is connected as a impulse radio call (e.g., in FIG.

12. impulse radio transceiver 1 302 is enabled by microcomputer 1206...

...from decision block 1412 to block 1414 where the initiated call is connected as a impulse radio call.

Referring now to FIG. 5. there is illustrated a flow chart for the process...

...and 13, respectively, for originating a telephone call as a cellular telephone call or a impulse radio telephone call ...1508, where a check is made to determine if the user's preference is for impulse radio phone operation. If not, NO

branch is taken to block 15 1 0 to determine if a call can be placed on the **cellular** /PCS system. If so. YES branch is taken to block 1516 where the call origination is connected as a **cellular** /PCS call. If not, NO branch is taken to decision block 15 121 to determine if a call can be successfully placed on the **impulse radio** system. Referring back to decision block 1508, if preference is for **impulse radio**.. YES branch is also taken to decision block 1512.

If an **impulse radio** call can be successfully placed. YES branch is taken from decision block 1512 to block 1514 where the call is connected as an **impulse radio** call. If not. NO branch is taken to decision block 1504 to determine if a call had been tried unsuccessfully on the **cellular** system. If so, YES branch is taken to block 1506 to wait for a call...

...decision block 15 1 0 to determine if the call can be placed on the **cellular** system.

Referring now to FIG. 16. there is illustrated a flow chart for the process...

...and I respectively, for receiving a telephone call as a cellular telephone call or a **impulse radio** telephone call according to user selectable preference.

Entering at block 1600. the user activates the...

...branch is taken to decision block 1608 to determine if the call is on the **impulse radio** system. If so. the YES branch is taken to block 161 0 where the incoming call is connected as a **impulse radio** call. If not, the NO branch is 1 5 taken to block 1624 where the incoming call is connected as a **cellular** /PCS call.

Returning to decision block 1604, if the user's system preference does not...

...branch is taken to decision block 1606 to determine if the preference is for the **impulse radio** system. If so, the YES branch is taken to decision block 1614 to determine if the IRCT is within range of the **impulse radio** base station by sending the transmit security code and waiting for the receive security code from the **impulse radio** base station). If not, the NO branch is taken to block 1624 where the incoming call is connected as a **cellular** /PCS call. If the **cellular impulse radio** telephone is within range of the **impulse radio** base station. YES branch is taken from decision block 1614 to decision block 1616 to determine if the **cellular** system will forward the unanswered incoming call to the landline of the **impulse radio** base station when the **cellular** phone cannot be reached. This type of service is generally referred to as "call forwarding" (a process which redirects a call from the dialed **cellular** telephone number of IRCT I I 12 to the landline telephone number of **impulse radio** base station I 1 04) and can be determined by polling stored information in

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the memory associated with the IRCT microcomputer. "Call forwarding" of unanswered **cellular** telephone calls is a conventional service. also referred to as

call transfer" or "no-answer". provided by control terminals 1116 of conventional **cellular** telephone systems. If not. NO branch is taken to block 1624 where the incoming call is connected as a **cellular** call. If the **cellular** system will forward the unanswered incoming call. YES branch is taken from decision block 1616 to block 1620 where the

cellular page from the cellular base station is ignored and thereafter to decision block 1602 to wait for the incoming call to be received as a impulse radio call. I 0 Return to decision block 1606. if the preference is for a cellular call.

NO branch is taken to decision block 1612 to determine if the IRCT is...

...NO branch is taken to block 1610 where the incoming call is connected as a impulse radio call. If the landline telephone system will forward the unanswered incoming call. YES branch is taken from decision block 1618 to block 162-1 where the impulse radio page from the impulse radio base station is 2 5 ignored and thereafter back to decision block 1602 to wait for the incoming call to be received as a cellular /PCS call.

Referring now to FIG. 1 7. ...I2 and I3, respectively, for simultaneously processing both a cellular/PCS telephone call and an impulse radio telephone call and, if desired, three-way linking both calls.

Enter at block 1702. the...

...one call is assumed to be in process on either the cellular/PCS system or impulse radio system. Proceeding from block 1704 to decision block 1706. a check is made to determine...

...I2 and I3, respectively, for automatic linking between a cellular/PCS telephone call and an impulse radio telephone call. Entering at block 1802. the user activates the IRCT. Next at block 1804...

...1806, a check is made to determine if the call M process is on the impulse radio system. If so. YES branch I 0 is taken to decision block 1810 to determine if the IRCT is still within range of the impulse radio base stations (e.g., signal quality is good). If so, YES branch is taken back to decision block 1806. If the cellular /PCS impulse radio telephone is out of range of the impulse radio base stations, NO branch is taken from decision block 1810 to decision block 1814...

...determine if the user has selected transfer of the impulse radio call to the cellular /PCS system (e.g., by entering a predetermined code from the keypad). If so. YES branch is taken to block 1822 where an attempt is made to transfer the impulse radio call to the cellular system.

Assuming the called party has "call waiting". the transfer is attempted by placing another...

...long as possible.

Returning to decision block 1806, if the call is not on the impulse radio system. NO branch is taken to decision block 1808 to determine if the IRCT is still within range of the cellular base stations (e.g., signal quality is good). If so.

YES branch is taken back...

...1812 to determine if the user has selected transfer of the cellular call to the impulse radio system (e.g., by entering a predetermined code

from the keypad). If not, NO branch is taken to block 1816 where the cellular /PCS call is maintained as long as possible. If the user has selected call transfer...

...from decision block 1812 to block 1820 where an attempt is made to transfer the cellular /PCS call to the impulse radio system. Assuming the called party has "call waiting", the transfer is attempted by placing another call on the impulse radio system and waiting for the called party to answer. Thereafter, the path returns to decision cellular telephone calls and impulse radio telephone calls. Whenever the cellular impulse radio telephone is within range of the impulse radio base station, telephone calls are preferably originated on the impulse radio system, or if currently in process, are transferred to the impulse radio telephone system. While particular embodiments of the invention have been described, it will be understood ...

#### Claim

... radio receiver receiving voice or data information from said second impulse radio transmitter.

4 The impulse radio mobile communication system of claim 1, wherein said voice or data communication network is a land line network.  
5 The impulse radio mobile communication system of claim 1, wherein said voice or data communications network is a cellular wireless network.

6 The impulse radio mobile communication system of claim 1, wherein said voice or data communication system is a PCS wireless network.

7 The impulse radio mobile communication system of claim 1, wherein said first impulse radio receiver is contained in a plug in accessory to a cellular or PCS telephone.

8 The impulse radio mobile communication system of claim 1, wherein said impulse radio transceiver is operably integrated into a handset capable of cellular, PCS or impulse radio communications.

9 The impulse radio mobile communication system of claim 3,  
10 wherein said first impulse radio transmitter and said second impulse radio receiver are contained in a base station networked within a plurality of impulse radio base stations, said plurality of impulse radio base stations providing communication coverage for a given area.

11 The impulse radio mobile communication system of claim 3, further comprising a signal strength detection means, said signal strength detection means detecting the strength of cellular /PCS wireless communication signals as well as impulse radio communication signals.

12 The impulse radio mobile communication system of claim 3, further comprising a microprocessor for controlling communication functions, said microprocessor controlling audio circuitry associated with said second impulse radio transmitter and said first impulse radio receiver and audio circuitry associated with a Cellular /PCS transmitter and a Cellular PCS receiver, wherein when said signal detection means detects a weak signal in an impulse radio transmission, the microprocessor directs said audio circuitry of said

cellular PCS transceiver to be activated by way of an audio switch.  
I The impulse radio mobile communication system of claim 3,  
further comprising a microprocessor for controlling communication  
functions,

t@

said microprocessor controlling audio circuitry associated with said  
second impulse radio transmitter and said first impulse radio  
receiver and audio circuitry associated with a Cellular /PCS transmitter  
and a CellularPCS receiver, wherein when said signal detection means  
detects a signal of sufficient strength to communicate via an impulse  
radio communication means, ongoing Cellular /PCS communications are  
automatically switched to impulse radio communications.

I I A method of originating telephone calls in an impulse radio  
cellular telephone system that has a memory, a cellular transceiver  
and an impulse radio transceiver and that can originate, according  
to a pre-selected preference, a cellular telephone call and an impulse  
radio telephone call on at least one impulse radio coupled to a  
telephone line having a telephone number,  
said method comprising the steps of

id pre

storing said pre-selected preference in said memory;  
determining availability of at least one cellular radio channel of  
said cellular telephone system;  
originating said first call of said cellular telephone call or said  
impulse radio telephone call corresponding to said stored  
pre-selected preference;  
and  
automatically originating a second call of said cellular telephone  
call or said impulse radio telephone call not corresponding to said  
stored preselected preference.

14 A method of receiving, in...

...from telephone  
input means, a second telephone call during a first telephone call in an  
impulse radio cellular telephone that can originate and receive  
cellular telephone calls and impulse radio telephone calls on at  
least one impulse radio coupled to a telephone line having a  
telephone number, said second telephone call being an impulse radio  
telephone call when said first telephone call is a cellular telephone  
call, and said second telephone call being a cellular telephone call  
when said first telephone call is an impulse radio telephone call,  
said method comprising the steps of  
detecting that said second telephone call has...

...second predetermined input signal.

I 0 15. A method of originating telephone calls in a cellular cordless  
telephone that has a memory, a cellular transceiver and an impulse  
radio

transceiver and that can originate according to a pre-selected  
preference, a cellular telephone call on cellular radio channels of a  
cellular telephone system and impulse radio telephone calls on at  
least one impulse radio coupled to a telephone landline having a  
landline telephone number, said impulse radio cellular telephone  
including first and second system indicating means, said method  
comprising the steps of:

storing said pre-selected preference in said memory;  
determining availability of at least one of said cellular radio  
channels of said cellular telephone system;  
id first system indicating means said at least one of

activating said I I  
said cellular radio channels of said cellular telephone system is  
available and said second system indicating means if impulse radio  
transmissions are possible:  
selecting a first call of said cellular telephone call or said impulse

radio telephone call corresponding to said stored pre-selected  
preference;  
originating said first call and  
automatically originating a second call of said cellular telephone  
call or said cordless telephone call not corresponding to said stored  
pre-selected preference...

...first call can not be successfully originated.  
. The method according to claim 15, wherein said impulse radio  
cellular telephone further includes first and second call indicating  
means, said method further including the step of activating said first  
call indicating means during a cellular telephone call and said second  
call indicating means during an impulse radio telephone call.

17 A method of receiving incoming telephone calls in an impulse  
radio cellular telephone that has a memory, a cellular transceiver  
and an impulse radio transceiver and that can receive a call  
according to a pre-selected preference I 0 of cellular telephone calls  
to a cellular telephone number on cellular radio channels of a  
cellular telephone system or impulse radio telephone calls on an  
impulse radio coupled to a telephone landline having a landline  
telephone number, said impulse radio cellular telephone including  
first and second call  
indicating means, said method comprising the steps of:  
1...

...call matches said stored pre-selected preference;  
activating said first call indicating means if a cellular telephone  
call is accepted and the second call indicating means if an impulse  
radio  
telephone call is accepted. and  
ignoring an incoming telephone call when said incoming  
telephone...

1/3,K/4 (Item 1 from file: 350)  
DIALOG(R) File 350:Derwent WPIX  
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015861221 \*\*Image available\*\*  
WPI Acc No: 2004-019051/200402

Wireless LAN embodying device using IR system  
Patent Assignee: CURITEL COMMUNICATIONS INC (CURI-N)  
Inventor: AHN J C  
Number of Countries: 001 Number of Patents: 001  
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
KR 2003059601	A	20030710	KR 2002191	A	20020103	200402 B

Priority Applications (No Type Date): KR 2002191 A 20020103

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
KR 2003059601	A	1	H04L-012/46	

Abstract (Basic):

... A wireless LAN(Local Area Network) embodying device using an IR( Impulse Radio ) system is provided to perform a secure communication of cellular phones which belong in a group of a specific area, using the IR system.

1/3,K/5 (Item 2 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
(c) 2004 Thomson Derwent. All rts. reserv.

013913430 \*\*Image available\*\*  
WPI Acc No: 2001-397643/200142  
XRPX Acc No: N01-293084

Impulse radio mobile communication system has impulse radio transmitter which is interfaced with land line, cellular or PCS telephone network

Patent Assignee: TIME DOMAIN CORP (TIME-N)  
Inventor: FINN J S; HILLIARD D E; PETROFF R G  
Number of Countries: 095 Number of Patents: 004  
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200131929	A2	20010503	WO 2000US41493	A	20001025	200142 B
AU 200136367	A	20010508	AU 200136367	A	20001025	200149
US 6351652	B1	20020226	US 99161356	A	19991026	200220
			US 99436235	A	19991109	
EP 1232572	A2	20020821	EP 2000991879	A	20001025	200262
			WO 2000US41493	A	20001025	

Priority Applications (No Type Date): US 99436235 A 19991109; US 99161356 P 19991026

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

WO 200131929 A2 E 60 H04Q-000/00

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TZ UG ZW

AU 200136367 A H04Q-000/00 Based on patent WO 200131929

US 6351652 B1 H04B-001/38 Provisional application US 99161356

EP 1232572 A2 E H04B-001/38 Based on patent WO 200131929

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

Impulse radio mobile communication system has impulse radio transmitter which is interfaced with land line, cellular or PCS telephone network

Abstract (Basic):

... The system includes an impulse radio base station (1104) and local area impulse radio base station (1110) which communicate with an impulse radio or cellular or PCS telephone (1112). An impulse radio transmitter in the base station is interfaced with a land line, cellular or personal communication service (PCS), wireless network impulse.

... a) Method of originating telephone calls in impulse radio cellular telephone system...



...b) Method of receiving incoming telephone calls in impulse radio cellular telephone system...

...The figure shows the block diagram of impulse radio cellular telephone (IRCT) system...

1/3,K/6 (Item 3 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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012228187 \*\*Image available\*\*  
WPI Acc No: 1999-034294/199903  
XRPX Acc No: N99-025638

Octave band antenna assembly for impulse radio and cellular phones  
- has two identical planar dipole arrays that are parallel to each other  
and positioned such that phase centre of each dipole element form line  
that is orthogonal to planar extent of dipole array

Patent Assignee: RAYTHEON CO (RAYT )  
Inventor: LEE J J; LIVINGSTON S W  
Number of Countries: 001 Number of Patents: 001  
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5841405	A	19981124	US 96636621	A	19960423	199903 B

Priority Applications (No Type Date): US 96636621 A 19960423

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 5841405	A	5	H01Q-021/00	

Octave band antenna assembly for impulse radio and cellular phones  
...

1/3,K/7 (Item 4 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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010691721 \*\*Image available\*\*  
WPI Acc No: 1996-188677/199619  
Related WPI Acc No: 1996-497920; 1997-052692  
XRPX Acc No: N96-157771

Ultra-wideband impulse radio time-domain communication system - uses  
sub-carriers to provide separate, linear channels, having low noise and  
distortion, for voice, video or data

Patent Assignee: TIME DOMAIN CORP (TIME-N); TIME DOMAIN SYSTEMS INC  
(TIME-N); PULSON COMMUNICATIONS CORP INC (PULS-N); PULSON COMMUNICATIONS  
CORP (PULS-N)

Inventor: COWIE I A; FULLERTON L W  
Number of Countries: 066 Number of Patents: 016  
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9609694	A1	19960328	WO 95US12313	A	19950920	199619 B
AU 9536855	A	19960409	AU 9536855	A	19950920	199629
EP 782791	A1	19970709	EP 95934546	A	19950920	199732
			WO 95US12313	A	19950920	
US 5677927	A	19971014	US 94309973	A	19940920	199747
JP 10508725	W	19980825	WO 95US12313	A	19950920	199844
			JP 96511126	A	19950920	
KR 97706662	A	19971103	WO 95US12313	A	19950920	199844

			KR 97701807	A	19970320	
US 5960031	A	19990928	US 94309973	A	19940920	199947
			US 97949145	A	19971010	
US 5963581	A	19991005	US 94309973	A	19940920	199948
			US 97949143	A	19971010	
AU 712260	B	19991104	AU 9536855	A	19950920	200003
US 5995534	A	19991130	US 94309973	A	19940920	200003
			US 97949144	A	19971010	
US 6031862	A	20000229	US 94309973	A	19940920	200018
			US 97948781	A	19971010	
AU 200014934	A	20000413	AU 9536855	A	19950920	200028 N
			AU 200014934	A	20000204	
CN 1169220	A	19971231	CN 95195805	A	19950920	200168
US 6430208	B1	20020806	US 94309973	A	19940920	200254
			US 97949144	A	19971010	
			US 9837704	A	19980310	
AU 756880	B	20030123	AU 9536855	A	19950920	200319 N
			AU 200014934	A	20000204	
US 20030043931	A1	20030306	US 94309973	A	19940920	200320
			US 97949144	A	19971010	
			US 9837704	A	19980310	
			US 2002196121	A	20020717	

Priority Applications (No Type Date): US 94309973 A 19940920; US 97949145 A 19971010; US 97949143 A 19971010; US 97949144 A 19971010; US 97948781 A 19971010; AU 200014934 A 20000204; US 9837704 A 19980310; US 2002196121 A 20020717

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9609694	A1	E	106	H04B-001/69	
Designated States (National): AM AT AU BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IS JP KE KG KP KR KZ LK LR LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TT UA UG UZ VN					
Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT KE LU MC MW NL OA PT SD SE SZ UG					
AU 9536855	A				Based on patent WO 9609694
EP 782791	A1	E			Based on patent WO 9609694
Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE					
US 5677927	A		44		
JP 10508725	W		98	H04J-013/00	Based on patent WO 9609694
KR 97706662	A				Based on patent WO 9609694
US 5960031	A				Div ex application US 94309973
					Div ex patent US 5677927
US 5963581	A				Div ex application US 94309973
					Div ex patent US 5677927
AU 712260	B				Previous Publ. patent AU 9536855
					Based on patent WO 9609694
US 5995534	A				Div ex application US 94309973
					Div ex patent US 5677927
US 6031862	A		H04B-015/00		Div ex application US 94309973
					Div ex patent US 5677927
AU 200014934	A		H04B-001/69		Div ex application AU 9536855
					Div ex patent AU 712260
CN 1169220	A		H04B-001/69		
US 6430208	B1		H04B-001/69		Div ex application US 94309973
					Cont of application US 97949144
					Div ex patent US 5677927
					Cont of patent US 5995534
AU 756880	B		H04B-001/69		Div ex application AU 9536855
					Previous Publ. patent AU 200014934

US 20030043931 A1

H04L-027/04

Div ex patent AU 712260

Div ex application US 94309973

Cont of application US 97949144

Cont of application US 9837704

Div ex patent US 5677927

Cont of patent US 5995534

Cont of patent US 6430208

...Abstract (Basic): USE/ADVANTAGE - In time-domain **impulse radio**  
communication, for e.g. **cellular** /wireless telephones etc. providing  
multi-mile range with improved signal-to-noise ratios, using low...

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